FIG. 1

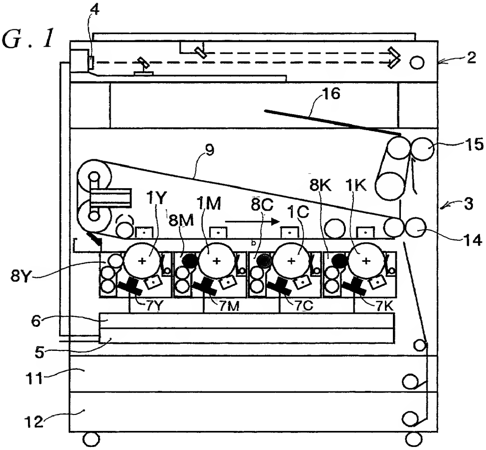


FIG.2

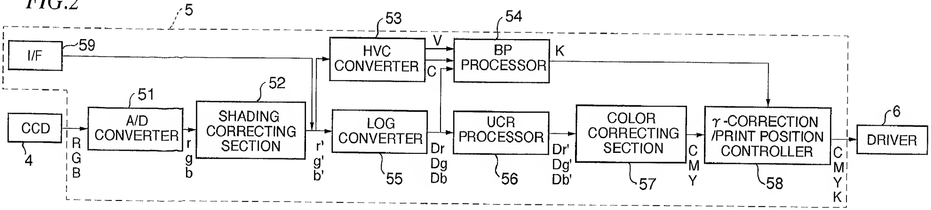

5
I/F
59
CCD
4
R
G
B
A/D CONVERTER
51
r
g
b
SHADING CORRECTING SECTION
52
r'
g'
b'
HVC CONVERTER
53
V
C
LOG CONVERTER
55
Dr
Dg
Db
BP PROCESSOR
54
K
UCR PROCESSOR
56
Dr'
Dg'
Db'
COLOR CORRECTING SECTION
57
C
M
Y
γ-CORRECTION /PRINT POSITION CONTROLLER
58
C
M
Y
K
DRIVER
6

FIG. 3

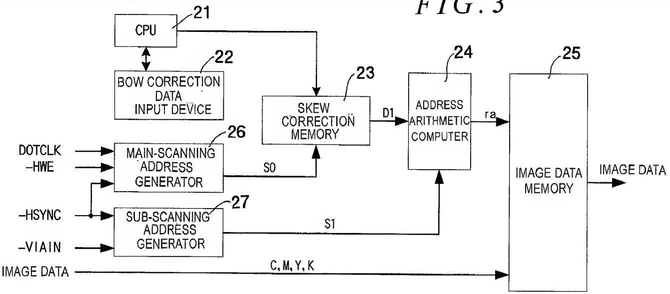

CPU
21
BOW CORRECTION DATA INPUT DEVICE
22
SKEW CORRECTION MEMORY
23
ADDRESS ARITHMETIC COMPUTER
24
IMAGE DATA MEMORY
25
DOTCLK
–HWE
MAIN-SCANNING ADDRESS GENERATOR
26
–HSYNC
SUB-SCANNING ADDRESS GENERATOR
27
–VIAIN
IMAGE DATA
D1
ra
S0
S1
C, M, Y, K
IMAGE DATA

FIG. 4

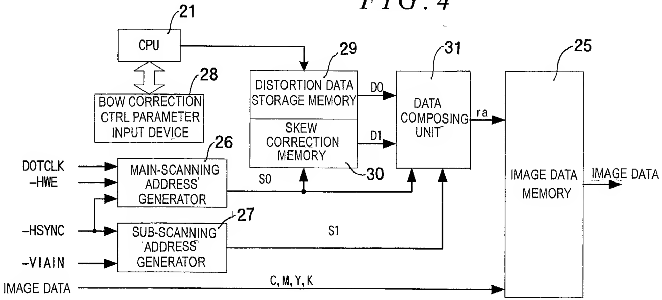

CPU
21
BOW CORRECTION CTRL PARAMETER INPUT DEVICE
28
DISTORTION DATA STORAGE MEMORY
29
SKEW CORRECTION MEMORY
30
DATA COMPOSING UNIT
31
IMAGE DATA MEMORY
25
DOTCLK
–HWE
MAIN-SCANNING ADDRESS GENERATOR
26
–HSYNC
SUB-SCANNING ADDRESS GENERATOR
27
–VIAIN
IMAGE DATA
D0
D1
ra
S0
S1
C, M, Y, K
IMAGE DATA

FIG. 5

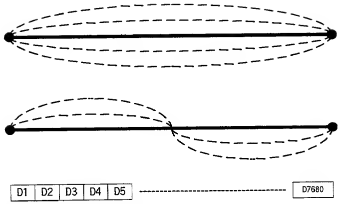

D1
D2
D3
D4
D5
D7680
BOW CORRECTION DATA

FIG. 6

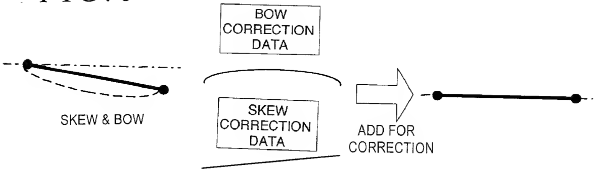

SKEW & BOW
BOW CORRECTION DATA
SKEW CORRECTION DATA
ADD FOR CORRECTION

FIG.7

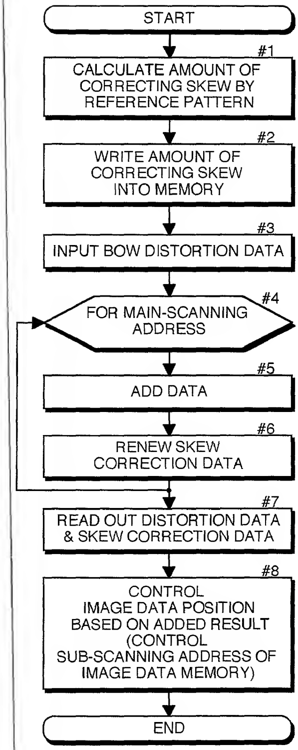

START
#1
CALCULATE AMOUNT OF CORRECTING SKEW BY REFERENCE PATTERN
#2
WRITE AMOUNT OF CORRECTING SKEW INTO MEMORY
#3
INPUT BOW DISTORTION DATA
#4
FOR MAIN-SCANNING ADDRESS
#5
ADD DATA
#6
RENEW SKEW CORRECTION DATA
#7
READ OUT DISTORTION DATA & SKEW CORRECTION DATA
#8
CONTROL IMAGE DATA POSITION BASED ON ADDED RESULT (CONTROL SUB-SCANNING ADDRESS OF IMAGE DATA MEMORY)
END

FIG.8

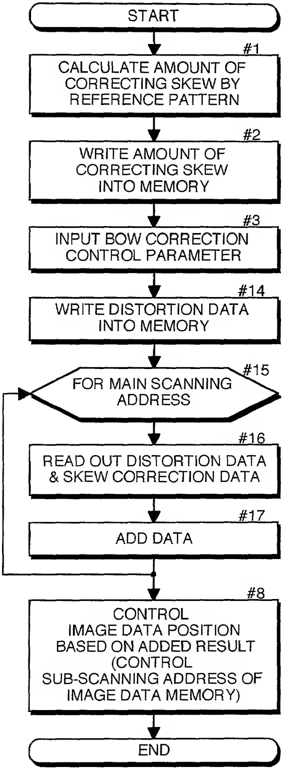
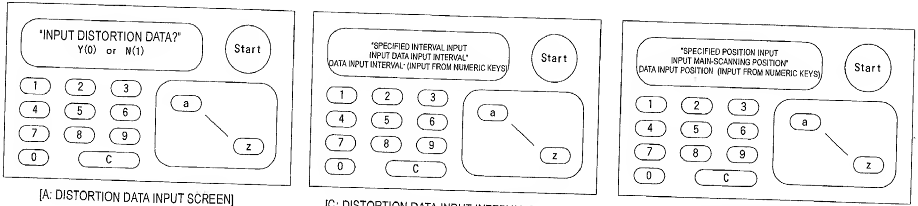

START
#1
CALCULATE AMOUNT OF CORRECTING SKEW BY REFERENCE PATTERN
#2
WRITE AMOUNT OF CORRECTING SKEW INTO MEMORY
#3
INPUT BOW CORRECTION CONTROL PARAMETER
#14
WRITE DISTORTION DATA INTO MEMORY
#15
FOR MAIN SCANNING ADDRESS
#16
READ OUT DISTORTION DATA & SKEW CORRECTION DATA
#17
ADD DATA
#8
CONTROL IMAGE DATA POSITION BASED ON ADDED RESULT (CONTROL SUB-SCANNING ADDRESS OF IMAGE DATA MEMORY)
END

FIG. 9 DISTORTION DATA INPUT PANEL


"INPUT DISTORTION DATA?"
Y(0) or N(1)

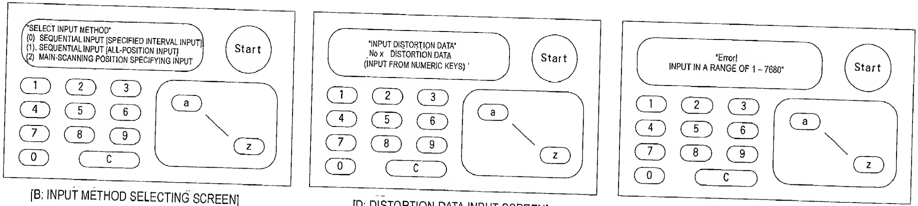
"SPECIFIED INTERVAL INPUT
INPUT DATA INPUT INTERVAL"
DATA INPUT INTERVAL: (INPUT FROM NUMERIC KEYS)

"SPECIFIED POSITION INPUT
INPUT MAIN-SCANNING POSITION"
DATA INPUT POSITION (INPUT FROM NUMERIC KEYS)

[A: DISTORTION DATA INPUT SCREEN]

[C: DISTORTION DATA INPUT INTERVAL SCREEN]
HEREAFTER, GO TO D

[E: SPECIFIED POSITION INPUT SCREEN]
HEREAFTER, GO TO D


"SELECT INPUT METHOD"
(0) SEQUENTIAL INPUT [SPECIFIED INTERVAL INPUT]
(1). SEQUENTIAL INPUT [ALL-POSITION INPUT]
(2) MAIN-SCANNING POSITION SPECIFYING INPUT

"INPUT DISTORTION DATA"
No x DISTORTION DATA
(INPUT FROM NUMERIC KEYS) '

"Error!
INPUT IN A RANGE OF 1 – 7680"

[B: INPUT METHOD SELECTING SCREEN]

(0) → TO C
(1) → TO D
(2) → TO E

[D: DISTORTION DATA INPUT SCREEN]

[F: EXAMPLE OF INPUT ERROR]

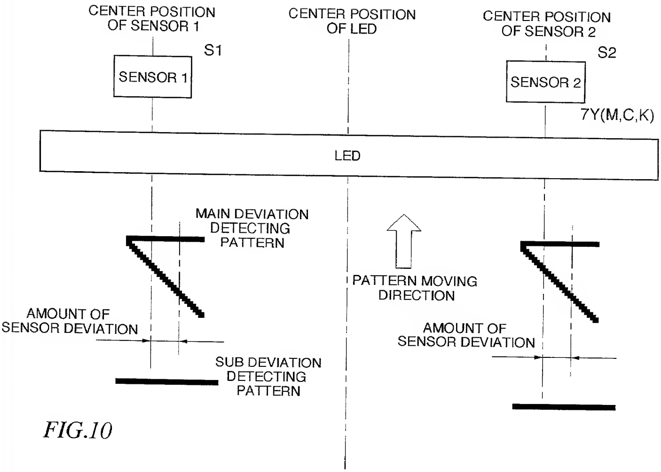

CENTER POSITION OF SENSOR 1
CENTER POSITION OF LED
CENTER POSITION OF SENSOR 2
S1
S2
SENSOR 1
SENSOR 2
7Y(M,C,K)
LED
MAIN DEVIATION DETECTING PATTERN
PATTERN MOVING DIRECTION
AMOUNT OF SENSOR DEVIATION
AMOUNT OF SENSOR DEVIATION
SUB DEVIATION DETECTING PATTERN

FIG.10

FIG.11

[AMOUNT OF COLOR DEVIATION IN MAIN SCANNING]

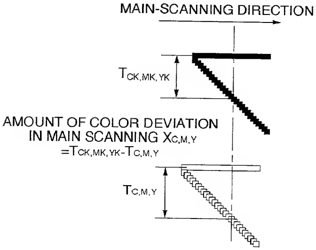


FIG.12

[AMOUNT OF COLOR DEVIATION IN SUB SCANNING]

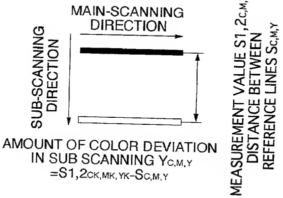


FIG.13

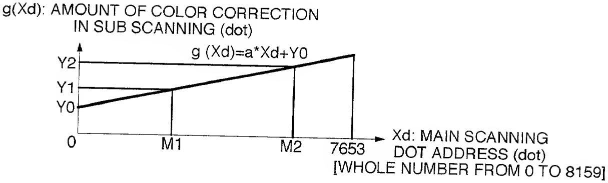


FIG.14

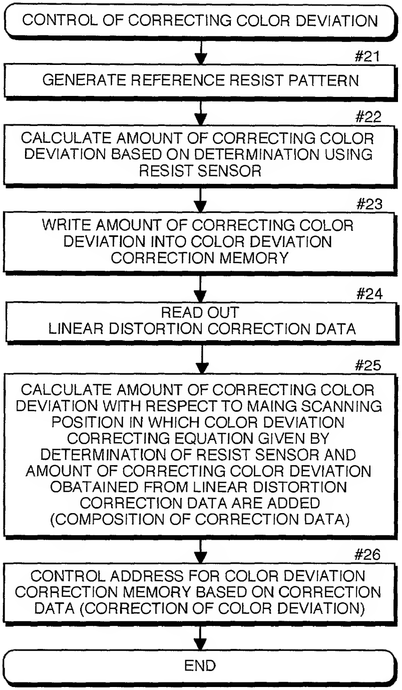

CONTROL OF CORRECTING COLOR DEVIATION
#21
GENERATE REFERENCE RESIST PATTERN
#22
CALCULATE AMOUNT OF CORRECTING COLOR DEVIATION BASED ON DETERMINATION USING RESIST SENSOR
#23
WRITE AMOUNT OF CORRECTING COLOR DEVIATION INTO COLOR DEVIATION CORRECTION MEMORY
#24
READ OUT LINEAR DISTORTION CORRECTION DATA
#25
CALCULATE AMOUNT OF CORRECTING COLOR DEVIATION WITH RESPECT TO MAING SCANNING POSITION IN WHICH COLOR DEVIATION CORRECTING EQUATION GIVEN BY DETERMINATION OF RESIST SENSOR AND AMOUNT OF CORRECTING COLOR DEVIATION OBATAINED FROM LINEAR DISTORTION CORRECTION DATA ARE ADDED (COMPOSITION OF CORRECTION DATA)
#26
CONTROL ADDRESS FOR COLOR DEVIATION CORRECTION MEMORY BASED ON CORRECTION DATA (CORRECTION OF COLOR DEVIATION)
END

FIG.15

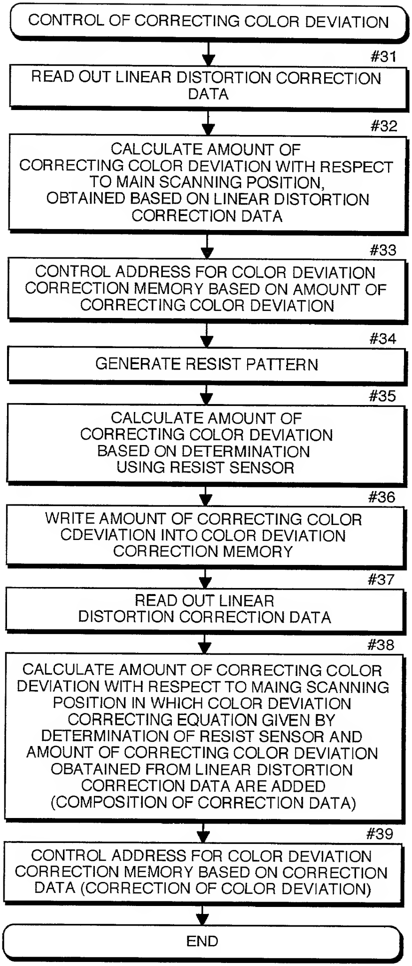

CONTROL OF CORRECTING COLOR DEVIATION
#31
READ OUT LINEAR DISTORTION CORRECTION DATA
#32
CALCULATE AMOUNT OF CORRECTING COLOR DEVIATION WITH RESPECT TO MAIN SCANNING POSITION, OBTAINED BASED ON LINEAR DISTORTION CORRECTION DATA
#33
CONTROL ADDRESS FOR COLOR DEVIATION CORRECTION MEMORY BASED ON AMOUNT OF CORRECTING COLOR DEVIATION
#34
GENERATE RESIST PATTERN
#35
CALCULATE AMOUNT OF CORRECTING COLOR DEVIATION BASED ON DETERMINATION USING RESIST SENSOR
#36
WRITE AMOUNT OF CORRECTING COLOR CDEVIATION INTO COLOR DEVIATION CORRECTION MEMORY
#37
READ OUT LINEAR DISTORTION CORRECTION DATA
#38
CALCULATE AMOUNT OF CORRECTING COLOR DEVIATION WITH RESPECT TO MAING SCANNING POSITION IN WHICH COLOR DEVIATION CORRECTING EQUATION GIVEN BY DETERMINATION OF RESIST SENSOR AND AMOUNT OF CORRECTING COLOR DEVIATION OBATAINED FROM LINEAR DISTORTION CORRECTION DATA ARE ADDED (COMPOSITION OF CORRECTION DATA)
#39
CONTROL ADDRESS FOR COLOR DEVIATION CORRECTION MEMORY BASED ON CORRECTION DATA (CORRECTION OF COLOR DEVIATION)
END

FIG. 16(a)

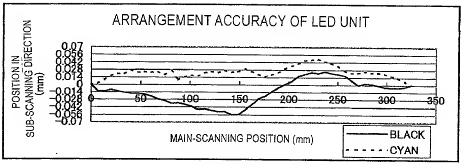


FIG. 16(b)

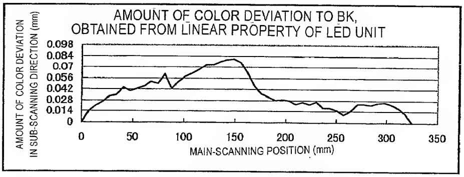


FIG. 16(c)

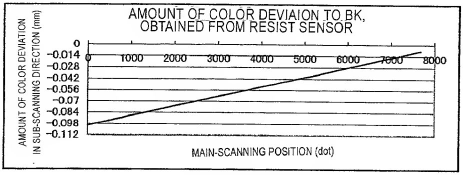


FIG. 16(d)

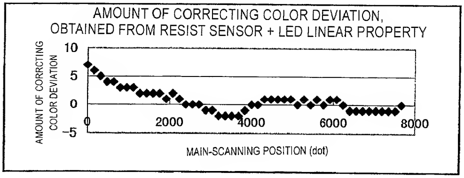


FIG. 17

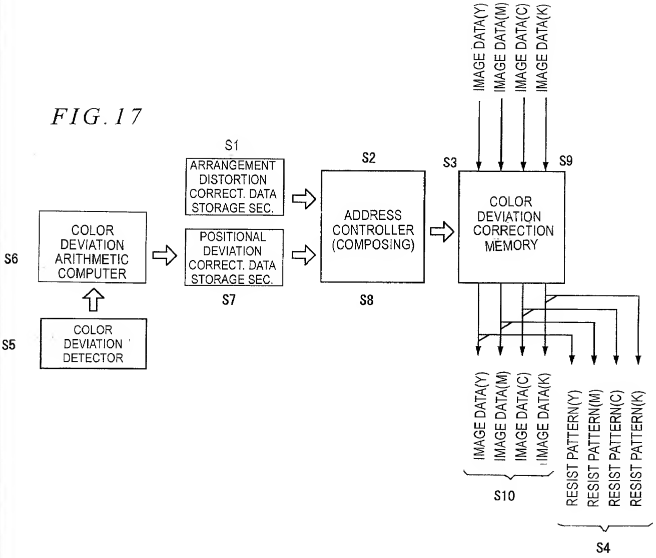


IMAGE DATA(Y)
IMAGE DATA(M)
IMAGE DATA(C)
IMAGE DATA(K)
S1
ARRANGEMENT DISTORTION CORRECT. DATA STORAGE SEC.
S2
ADDRESS CONTROLLER (COMPOSING)
S3
S9
COLOR DEVIATION CORRECTION MEMORY
S6
COLOR DEVIATION ARITHMETIC COMPUTER
POSITIONAL DEVIATION CORRECT. DATA STORAGE SEC.
S7
S8
S5
COLOR DEVIATION DETECTOR
IMAGE DATA(Y)
IMAGE DATA(M)
IMAGE DATA(C)
IMAGE DATA(K)
S10
RESIST PATTERN(Y)
RESIST PATTERN(M)
RESIST PATTERN(C)
RESIST PATTERN(K)
S4

FIG. 18
PRIOR ART

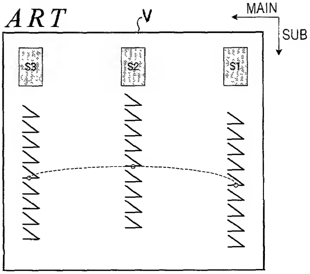


FIG. 19

ELEMENTS OF COLOR DEVIATION
-DEVIATION IN MAIN-SCANNING DIRECTION
-DEVIATION IN SUB-SCANNING DIRECTION
-ANGLE DEVIATION (SKEW)
-DEVIATION IN SCANNING LINE (BOW)
-SCALING RATIO IN MAIN-SCANNING DIRECTION